CARCINOMA OF THE LARYNX,

SUPERVENING UPON

SUBGLOTTIC GOUTY INFILTRATION

NECESSITATING TRACHEOTOMY.

BY

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CARCINOMA OF THE LARYNX.

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Four years ago, in the second edition of my work on "Diseases of the Throat and Larynx," I drew attention to the subject of œdema of the larynx. This was carefully considered in its anatomical and pathological relations, and led me to abolish the old and familiar term of "œdema of the glottis," and to substitute for it the divisions of supra-glottic œdema and subglottic œdema of the larynx, which more correctly expressed the true seat of the effusion into the submucous tissues, whatever its consistence, and whether seated above or below the glottis. By the term "glottis" is meant the space situated immediately between the free borders of the vocal cords.

In my work alluded to I showed, satisfactorily and clearly, that the diagnosis of either form of œdema could generally be made out with the aid of the laryngoscope, and that the treatment to be adopted, if of an operative character, was indicated according to the situation, extent, and nature of the œdema.

During the past four years my views regarding œdema of the larynx have never been called in question; and I take it for granted that pathologists now fully recognize the distinction between the old and the modern views, and that in time the latter will become generally accepted, whilst the former will be abandoned, from the fact that there is no such disease of the larynx as œdema of the glottis *per se*.

In the present communication I propose to bring forward a new condition of subglottic disease of the larynx, partaking in its latter stages of œdema, but occurring as a consequence of gout, and requiring operative interference to save life. Before narrating the case, which furnishes so good an example of the affection to be described, it may be as well to state that, as a general rule, when œdema of the larynx is situated *above* the glottis, the submucous tissues are infiltrated by serum; and when

the œdema is *below* the glottis, the effusion is of a firmer consistence, and is generally of a fibrinous character. This distinction is important to bear in mind, for it will help to explain some of the appearances which were observed in the laryngeal mirror. It may also be observed that the case, although a little long, has been divested of all superfluous matter, the chief features only being given, consistent with a correct appreciation of the symptoms and general progress towards its termination.

Case.—The Rev. E. R. N., aged 58, consulted me, Sept. 25, 1863, for hoarseness and loss of voice, recommended to me by Mr. J. J. Terry, surgeon, of Wittersham, in Kent, and others. He was short in stature and stout; had led a most active life as a clergyman, and resided near the south coast on an elevated tract of country with a relaxing climate not unlike that of Hastings. He had been subject to gout on and off since the age of seventeen; and although not a martyr to it, he said he was never free from the disease, which had been of late years combined with rheumatism. His habit of drinking a bottle of sherry daily for many years may have conduced to this. He had always possessed a powerful voice, equal to three octaves, and had worked it hard in his vocation. Varying aphonia and hoarseness had been present since last Easter twelve months. This he said "followed forcible exertion in his church to drown the noise of a cough to which he was subject at the time." He had never suffered a day's illness previous to that, excepting his mild attacks of gout, which did not appear to have incapacitated him at any time from attending to his clerical duties, although he had taken much colchicum for the disease. Twelve months before seeing me had been treated by the application of nitrate of silver to the throat, and underwent a short trial of Faradisation without any sensible relief. Latterly he had been more subject to cough than formerly; he had felt more pain in his throat than heretofore, and was very liable to take cold. His voice, feeble and almost lost in the mornings, was recovered later, but was hoarse and rough; though low in tone, it was not inaudible, and sounded to me as if there were some obstruction within the larynx. He possesses a countenance with the Atheramatous expression well marked.

In speaking it seemed as if he had to force the words out to be heard, and the hoarseness at times was decidedly croupy and somewhat shrill. The throat was irritable; looking into it produced retching; when this was overcome the mucous membrane of the fauces was seen to be much relaxed, of a deep pink colour, with no apparent disease of the follicles. The laryngoscope revealed pendency of the epiglottis, with chronic tumefaction and redness, which extended to the interior of the larynx. The latter was seen in coughing and hemming, when the regulators of the glottis and vocal cords, together with the mucous mem-

brane of the trachea, were seen to be red, as if chronically inflamed. No growth was observed, but a distinct visible fold or swelling of the membrane below the vocal cords in the subglottic space was noticed, which reduced the capacity of the glottis. I applied a solution of nitrate of silver to the interior of the larynx by means of my laryngeal injector; he was put upon small doses of the iodide of ammonium with carminatives internally, and a gargle of bromide of ammonium, alum, krameria, glycerine, and water.

December 2.—The voice was much louder and stronger, though rough; the throat and larynx were much improved, the epiglottis was more elevated, the left vocal cord was normal, whilst some irritability still present prevented my seeing the right vocal cord. The nose was stuffed up as if from a cold; the right nostril is congenitally contracted. His appetite was poor. The mixture was changed to one of bromide of ammonium (4 gr. doses) and tincture of cinchona, and the same gargle increased in strength was continued. A solution of nitrate of silver was again applied to the interior of the larynx. Under topical treatment, by solutions of zinc or silver, for the next three days, his voice became clearer. The right vocal cord was much congested, whilst the left continued normal; and although the irritability of the fauces had much subsided, the subglottic swellings were ill defined, though still present on the right side. He felt a pressure in the middle of the chest as if the mischief were there, and complained of dyspnœa on ascending hills or stairs for some time.

December 3.—General health is better; the voice is not louder; it is more troublesome to speak at night than ever it has been before. The voice at times seems diplophonic, that is, with a double tone about it; he hoops sometimes in coughing, and moans at night on expiration. Both vocal cords are seen to-day: the right is more natural, and not so congested, but still there is irritability of the fauces. Repeat mixture and gargle.

April 18, 1864.—I was informed by letter that there was great dyspnœa at night, and learnt next day from Dr. Cock, who had examined him with the laryngoscope, that he thought he had succeeded in making out a growth within the larynx the size of a pea, and that deep inspiration was extremely difficult. On the evening of the 20th he called upon me with Mr. Terry, when I found his voice croupy, with noisy breathing. He had had much dyspnœa since his last visit to town, for he had caught cold, and this was followed by bronchitis. Both this evening and on the 21st he was carefully examined by the laryngoscope, when the glottis was seen to be contracted, of a narrow, elliptical shape; the right vocal cord was prominent, with a distinct swelling upon its surface, apparently involving

it and the regulator of the glottis; whilst both vocal cords were quite or nearly immovable. The mucous membrane was congested and thickened. The view could not be satisfactorily extended beyond the glottis, but the immobility of the vocal cords pointed to subglottic obstruction from œdema. Considering the narrow glottis, the great dyspnœa present, and the stridor, I advised the earliest performance of tracheotomy, which was concurred in by those interested.

April 22.—At half-past two o'clock, p.m., my colleague, Mr. Holthouse, performed tracheotomy, the patient lying on a sofa. From the shortness of the neck, the distance from the cricoid cartilage to the sternum not being more than an inch and a quarter, the operation was not an easy one. It was skilfully done in the usual manner, and the trachea exposed, but the rings were so strongly ossified as to present great obstacles to division with the knife, and when cut through could scarcely be separated to allow of the passage of the canula; but when it was introduced the patient quickly recovered himself, and breathed calmly and quietly. There was some amount of venous hæmorrhage during the operation, which added to the complication of the case. In the evening he was very comfortable, and breathing quietly without noise; he took light nourishment, such as jelly, beef tea, &c.

April 23.—Was a little gouty, with intermittent pulse. The tube came out in the evening, and was with difficulty returned, from the unyielding state of the tracheal rings.

April 28.—He went on tolerably well up to to-day, being free from gout. As the tube, however, would not remain in, Mr. Holthouse found it necessary to make a circular opening in the centre of the trachea by cutting away portions of the ossified rings with scissors; even then the tube could not be inserted. Later, the assistance of Mr. Prescott Hewett was obtained, when the incision in the neck was extended further upwards by Mr. Holthouse, and the cricoid cartilage laid bare. It was divided with a bone forceps, and portions of its lower edge were taken away; then a new and larger tube was successfully introduced, and all further trouble ceased. He was quite comfortable when I saw him in the evening. He continued to progress most favourably, and returned to his home in the country on the 30th of May, his general health being excellent.

June 11.—I visited him in the country. In the laryngeal mirror the glottis was seen to be but very slightly expanded. It was a little more so on my next visit to him on July 30th. He could breathe a little through the mouth on August 28th, when Mr. Terry introduced a new and larger silver-gilt tube.

November 19.—I saw him again in London. He had been tolerably free from attacks of gout. The wound was sore from

the stoppage of the fenestrated opening in the upper part of the tube by granulations and fragments of cartilage, which allowed no air to pass upwards. The laryngoscope revealed a narrow and irregularly curved glottis, with some swelling of the left side of the larynx, the mucous membrane of which, with that of the epiglottis and vocal cords, was of a pale pink. The obstruction was clearly in the subglottis. During the next ten weeks there was occasional bleeding from the wound. An attempt was made a few times to pass bougies upwards either of wax or metal, which improved the voice for a time; several fragments of ossified rings and cartilage came away; and in the beginning of December he was gouty. In coughing some expectoration would pass by the mouth.

January 26, 1865.—He had a severe attack of gout in the throat, affecting the ears as well, associated with great pain in both, with inflammation of the mucous membrane of the fauces. Some of the fingers were also affected. In the beginning of March there was some swelling in the trachea, which prevented the end of the tube passing quite home; the rings of the trachea were felt denuded of membrane; and some enlarged granulations commenced to form around the wound in the neck, which possessed the aspect of malignancy. There was also occasional difficulty of breathing through the tube.

March 24.—In swallowing fluid some of it passed out of the canula in the neck, followed by violent coughing; this commenced the night before. In two or three days fragments of solid food came through the wound, and an ulcerated opening was distinctly seen to communicate with the lower part of the pharynx, when the tube was temporarily removed. The laryngoscope revealed a foul ulcer on the right side of the pharyngeal surface of the cricoid cartilage, which induced Mr. Holthouse and myself on the 27th to declare the case now to be malignant ulceration of the throat, penetrating from the larynx into the pharyngeal sac.

He was now alternately better and worse, swallowing variable quantities of food, with the passage of more or less into the trachea according to circumstances. Sucking fluids through a small gutta percha tube very much obviated this complication. As, however, he could not swallow his usual quantity of food, he became gradually thinner; mild salivation was a constant source of annoyance; there were frequent attacks of dyspnœa with noisy breathing; he was tormented by thirst; oozing of blood occurred from the wound. The inhalation of chloroform in moderate quantities gave him great ease, but he passed wretched nights. The obstruction in the trachea was so great, that on three or four occasions I found it necessary, to save life, to pass a wax bougie through it with immediate relief.

By the end of April the malignant disease was extending in the throat and larynx, and the swallowing was not so good. He lingered on, however, in great suffering, and died on the 17th May from inanition. Some days before death the laryngeal mirror showed the carcinoma enlarging near the right side of the epiglottis, as well as at the back part of the top of the larynx and arytenoids, projecting backwards. The epiglottis was more elevated, being pushed upwards by the surrounding epithelial mass. Autopsy on 19th May, forty hours after death, assisted by Mr. Holthouse and Dr. Temple :—

The whole of the posterior and lower part of the cricoid cartilage and extreme fundus of the pharynx were destroyed by epithelial cancer; the larynx and pharynx communicated, or rather formed one large passage, so that everything swallowed went down to it, part coming out of the tube and part going down the œsophagus. The epiglottis was surrounded with hard scirrhous deposit, as seen during life with the laryngoscope. The rest of the œsophagus downwards, together with the stomach, was healthy, and so were all the viscera, excepting the liver which resembled the fatty liver sometimes seen in phthisis pulmonalis. All the tissues were gorged with fat. The lungs and heart were quite healthy; a few old pleuritic adhesions were present in the left side of the chest. The larynx was nearly quite blocked up with hard scirrhous masses, and the glottis and subglottic space were filled with them; in the last, the irregular growths or prominent folds at first seen were blended with the malignant disease. The upper part of the trachea was contracted and filled with malignant deposit, and on slitting up the tube there was no ulceration nor true stricture to be seen as we had at first suspected. The contraction was at the upper part, and the exfoliated fragments of necrosed rings were from the upper part of the tube also.

Commentary.—The point of special interest in the foregoing case is the swelling in the lower part of the larynx beneath the glottis—*i.e.*, in the subglottic space, which I believe was primarily of a gouty nature, and partook of the character of fibrine. Through the irritation of a cold this swelling began to increase, and thus diminished the passage through the glottis. It was for this that tracheotomy was performed, with the result of keeping the patient alive for nearly thirteen months. I must remark that after the operation, when the patient returned to his home, he went about in the most careless manner, with the neck exposed, and took but little trouble to avoid irritation of the larynx, in not always holding his finger to the mouth of the tube when he wished to speak. The consequence was that frequent attacks of bleeding occurred from the parts around the wound.

With respect to the seat of the obstruction being subglottic, there was no doubt of this, as the laryngoscope showed the upper part of the larynx to be comparatively free from disease or obstruction, and certainly there was no œdema in that situation. The nature of the operation to be performed was therefore obvious; for if laryngotomy had been given the preference, the tube would have been in contact with the diseased mass itself—a circumstance always to be regretted—and for which reason, if there be a doubt of the true seat of the obstruction, tracheotomy should always have the preference over laryngotomy. I would here remark *en passant* that tracheotomy is a preferable operation at all times where it can be done, because in laryngotomy, even premising the œdema to be supra-glottic, the working of the thyro-arytenoid muscles is greatly obstructed by contact with the tube of the canula, as well as from the forcible separation of the two great cartilages of the larynx in the crico-thyroid space.

The occurrence of cancer was a misfortune to be deplored, for it penetrated (through ulceration) the septum between the larynx and lower part of the pharynx, giving rise to much misery and discomfort, which destroyed the patient in eight weeks from inanition. A curious circumstance, in the latter part of the case, was the presence of constant salivation, which caused much inconvenience, and every effort to stop it seemed futile. It seems to me that it was more the result of the presence of the malignant disease in the throat setting up irritation than from any other cause.

In the course of a large experience I have not before seen an instance like the present, wherein the rings of the trachea possessed a steel-like hardness, the result of ossification, and not calcification—thus offering greater obstruction to division in the ordinary way, and afterwards to separation to allow of the introduction of the tube. It became necessary, as a consequence, to cut away portions of them with bone-forceps to allow of the easy wearing of a large tube. This ossified condition was due, I apprehend, to the long persistence of the gouty diathesis, and seriously complicated the operation of tracheotomy.

A case not dissimilar to the one under consideration was under my care in October, 1864, of a gentleman aged sixty-four, recommended to consult me by Mr. T. Bickerton, surgeon, of Liverpool. He had been a sufferer from chronic disease of the throat for six years, with hoarseness for nearly five. The voice, though hoarse and low, was not actually gone; his breathing was rough, and at times associated with stridor. The laryngoscope showed the epiglottis to be pendent and twisted towards the right side. Both vocal cords had lost their white colour, were thickened, narrowed, and of a pinkish drab; beneath the

left, and partly involving it, was a large growth projecting, occupying the entire left side of the subglottis, with a broad base, and extending fully to the middle of the cricoid area; it met the right vocal cord on attempting the utterance of sounds; its surface was raw, as if ulcerated; there was also ulceration at the posterior part of the larynx, running down to the growth. Here was an explanation of the cough and hoarseness present. In his history, he formerly had rheumatism and an attack of gout. The ulceration improved under treatment, and the subglottic swelling, so much resembling a distinct growth, became less. On his return to Liverpool he became rapidly worse from the effects of a cold contracted in London; and, in communication with Mr. Bickerton on the 14th of November, I advised tracheotomy to be performed in preference to laryngotomy, for the reasons already referred to, and this was done with immediate relief. He lived fourteen months, and died from asphyxia, the result of a communication between the larynx and œsophagus (commencing three weeks before death), the fatal termination being hastened by hæmorrhage from a vessel that had been ulcerated through by malignant disease of the larynx. At the post-mortem examination, cancerous disorganisation of the larynx was found, with cancerous deposit in the thyroid gland, and ulceration of the epiglottis and mucous membrane lining the larynx. I have not learnt whether the larynx below the glottis was blocked up with cancerous matter, as in my own case, for there also had the primary seat of the obstruction existed. At any rate, I take it for granted that there was much subglottic deposit found, and that the broad-based growth so distinctly seen during life was the result of firm fibrinous effusion beneath the mucous membrane, and not an ordinary wart. There is no evidence to show that its origin was gouty, although the general diathetic resemblance of both patients was remarkably strong.

It is by no means an uncommon circumstance to see instances of malignant disease of the œsophagus opening into the trachea, but it is the reverse for similar disease of the larynx to open into the œsophagus.

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